

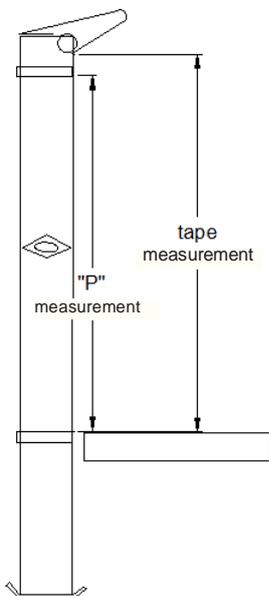
Nautos Batten Car Installation Manual

Tools required:

- 1) Cleaning cloth
- 2) Round file
- 3) Square file
- 4) Combination pliers
- 5) Clamp
- 6) Adhesive tape
- 7) Tape measure
- 8) Hacksaw
- 9) Drill/Screwdriver
- 10) Allen/Hex key



For “mast up” installation, all the initial work is done at deck level (no ladder is required which is unique to the Nautos system). However for final fixing of the tracks you will need to climb the mast. Use the correct safety equipment and a trained second person to assist you. This manual gives you the technical information on how to install the batten car system. This information is written specifically for specialised installers or expert users. Installation by personnel who are not experts may cause injury to users and those nearby as well as potential damage to property. If you do not understand any of the instructions, please contact Nautos or our approved distributors. The installer must have appropriate training in order to use this product. Nautos accepts no responsibility for damage or harm caused by not observing the safety requirements and instructions in this manual.



Calculating the total track length:

Calculate the length in meters by taking the “P” of your boat and adding 120mm. The “P” measurement can be obtained from your sail maker or boat manufacturer. The “P” length is the distance between the black bands on your mast (fig 1).

If you do not have this information you will have to measure it yourself by taking the distance from the lower part of the main halyard sheave down to the gooseneck (Fig 1). **ATTENTION:** If you measure yourself as shown in Fig 1 you do not have to add the extra 120mm mentioned above.

Fig 1

If the mast is on the ground, you can check you have the correct length of track by positioning all extrusions against the mast, keeping them in place with adhesive tape (fig 2).



Fig 2

Placing the slugs:

Nautos slugs are unique and allow for very simple assembly. When you place your order, choose between the different types of slugs, according to the size of your mast groove.

Check if the slugs you ordered fit correctly in your mast groove. If they are OK, start by assembling "trains" of slugs Fig 3.

Fig 3



The correct order of colours per train is:

Initially **one orange** (male part cut off - fig 5 & 6) followed by **one black**, then **two orange** and **another black**. Keep alternating with **two orange** and **one black**. Finalize with **one orange** immediately after **one black** (fig 4). The maximum length of a train should be 600mm (18 slugs).

Fig 4



Fig. 3



Fig 5



Fig 6

IMPORTANT ADVICE:

Each train should not exceed 600mm.

Each train must start with one orange (male part cut off), then a black and finish with black followed by one orange (fig 4).

Slide the "train" of slugs into the groove through the sail feeder opening ensuring the orange slug with the male part cut off is the first slug to enter the mast groove (Fig 3)

If the feeder opening is too short to feed the connected train, you can place each one individually into the opening but you must connect them (male into female) or it will be impossible to screw down the track as the spacing between black slugs will be incorrect.

Using a countersunk machine screw (M5 x 25mm for small slugs or M6 x 35mm for large slugs), lightly fasten it in the last black slug. Make a loose loop in the halyard and also tie on a retrieving line to the halyard. Pass the halyard loop over the bolt and pull the train to the top of the mast groove. Once the train is in place shake the halyard to move it away from the machine screw and use the retrieving line to pull the halyard back down. Friction will hold the slug trains in place after you have pulled the halyard back down.

ATTENTION: With every new train you feed into the mast, you must cut the small male part off the top orange slug to ensure a correct fit against the train already in the mast (Fig 5 and 6).

Repeat this process until you have a completed the train of slugs from the top of the mast to the feeder opening. You will now need to continue putting the slugs down from the feeder opening to the gooseneck.

ATTENTION: The last 5 slugs from below the sail opening down to the gooseneck must **ALL** be **BLACK** (fig 7).



Fig 7

Fixing the track:

The bottom track (fig 8) comes with an end stop in place as well as the batten cars loaded on. If the cars are not preloaded, fix the track, and then load the cars. You will notice that this track has two additional holes at the base and that the last four holes are 33mm apart. This is why you need additional black slugs at the end of the train. Start by securing the bottom track and give sufficient space that ensures it does not interfere with the gooseneck.



Fig 8

Make the first few turns of the bolt carefully with your hand, after you are sure that the screw engaged you can apply torque. Using an electric screwdriver/drill initially could lead to the nut becoming cross threaded.

Use Loctite™ and start to tighten the bolts. The slugs keep the holes automatically the correct distance apart and each **black** slug contains a nut. You just have to put the track against the mast and all the nuts are in the right place.

Every track must have at the top a nylon connector which goes inside the adjoining track (fig 9).

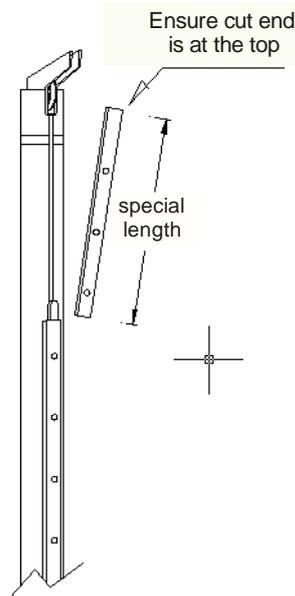
Fig 9



Insert the nylon connector only after you have secured the last screw in the track. This ensures you that the nylon connector rests in the correct place.

Add the next track into the connecting piece and secure the track to the mast. Repeat the process until you have secured the penultimate track.

Fig 10



After securing the penultimate track at the top of the mast you will need to cut the ultimate track to achieve the correct length (fig 10).

We recommend that you either take this measurement at the top of the mast with a tape measure or you offer the track up against the mast and mark the point to cut. Deburr using flat and round file. The track should be long enough to just fit under the main halyard sheave (fig 11).

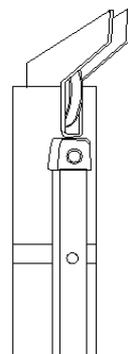


Fig 11



Fig 11

Drill an 8mm hole through the track approximately 20mm from the end. Slide the aluminium end stop on to the track with the rubber buffers facing downward and tighten the thumb screw into the newly drilled hole.

Should you in the future ever wish to remove the batten cars, we recommend that you simply remove the lowest section on track with the cars on it.

SAIL ADAPTATION INSTRUCTIONS

- 1) Recommended distance between cars is 1 metre (Fig 14)
- 2) Nautos provide cars with M10 thread studs for batten receptacles, Nautos or other brands
- 3) **IMPORTANT**-Reef points must be at least, 300mm under each car. Cars are not intended to hold reef or tack loads (**FIG 14**)

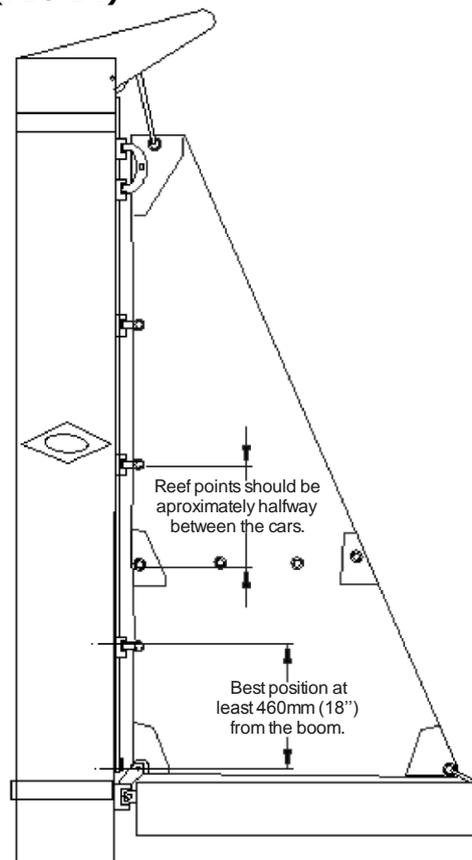
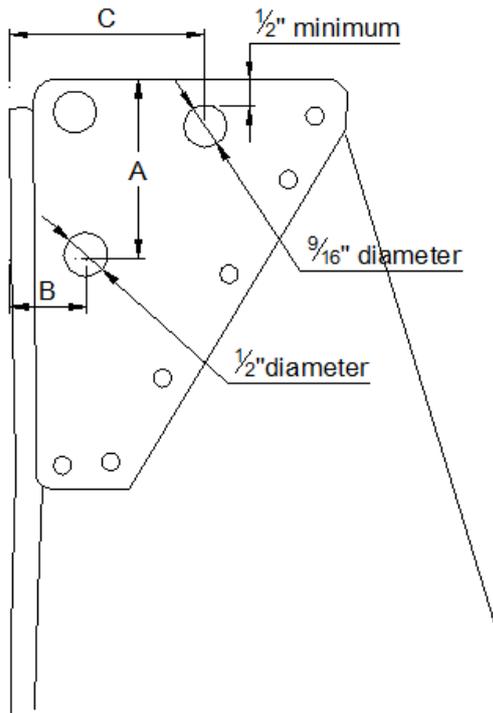


Fig 14

The head board must have a 12mm hole at correct distance to the top car coupler (bridge) and a 14mm hole for halyard attachment (Fig 15)



A: 90mm to 100mm
B: 25mm
C: 75mm

Fig 15

For sails that are not fully battened or intermediate cars web the plastic spacer 18mm to 22mm ahead of the sail. (fig 16)

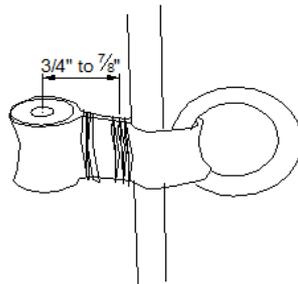


Fig 16